

A STUDY OF THE PROPORTIONS OF MALE AND FEMALE MOSQUITOES IMMEDIATELY AFTER EMERGENCE

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During the recent war, while the author was doing malaria survey work in Assam, India, some problems were studied using culicines which were so extremely abundant. A filthy open-sewer flowed directly through the village of Dibrugarh in Upper Assam, and served as the breeding place of millions of adult mosquitoes which swarmed through the huts during the night.

Almost all of these were of the species *Culex (Culex) fatigans* Wiedemann 1828 but a few *Aedes (Stegomyia) albopictus* Skuse 1894 were collected. The question naturally arose as to whether or not the adults emerged in greater numbers during the evening than they did at other times, and what the proportions at various times were of males and females.

Because of obvious restrictions during war time, traps could not be set over the breeding places in the village which would have been an ideal method, but instead

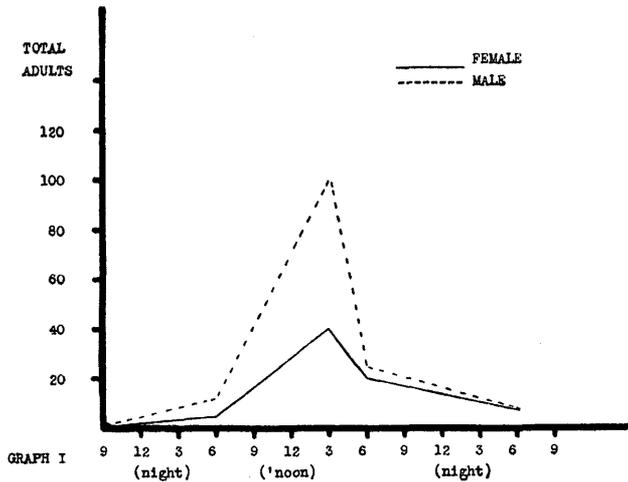


FIG. 1. Emergence of adult mosquitoes from collection number one.

large numbers of fourth instar larvae and pupae were collected and taken to the laboratory for their emergence. Possibly this transfer changed the time when they would have normally emerged and even possibly the sex may have been changed, but records were kept anyway for study. Eight hundred sixty (860) adults emerged in the laboratory.

The larvae and pupae were collected at random along the edge of the sewer and placed in narrow-mouthed litre bottles which were kept in the laboratory where the temperature ranged between seventy and eighty-five degrees Fahrenheit. Erlenmeyer flasks were inverted and placed over the mouths of the bottles. The adults emerged and rose into the flasks where they remained. At regular intervals the flasks were removed and their contents identified.

BOTTLE NUMBER ONE: The first larvae and pupae collected emerged as shown in Fig. 1, Graph I within thirty-three hours. The largest number emerged during the hours between ten in the morning and two in the afternoon. The ratio of males over females was approximately two to one at all hours except at six o'clock in the evening.

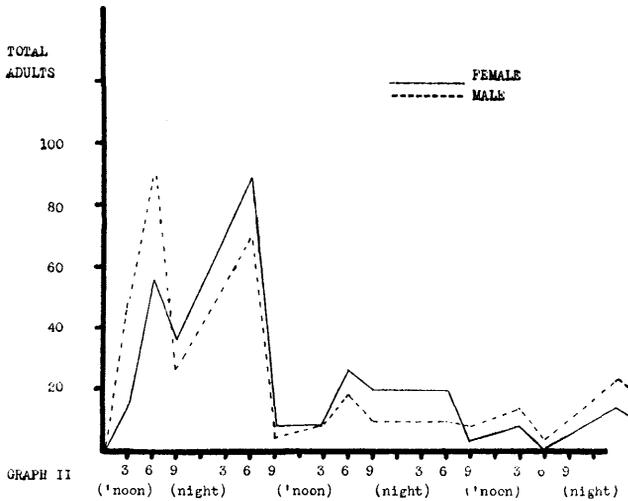


FIG. 2. Emergence of adult mosquitoes from collections, two, three, four and five.

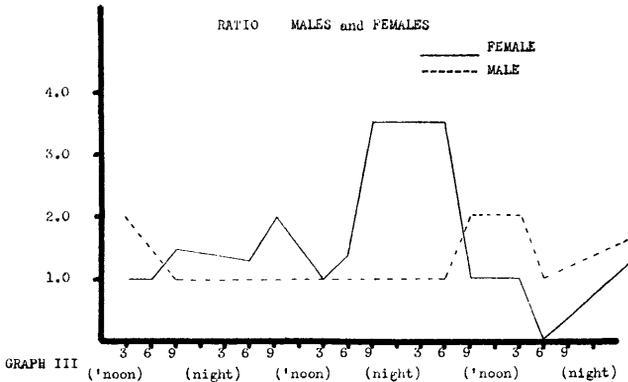


FIG. 3. Ratio of male to female mosquitoes at various times during the day.

BOTTLES NUMBER TWO, THREE, FOUR, AND FIVE: The results of these four were combined because of their similarity. The procedures were identical.

With the exception of the pulsation of adults which occurred six hours after the apparatus was set up, most of the adults emerged during the early evening and night (Fig. 2). This was in contrast to the first larvae and pupae collected. Possibly the fact that these first ones were collected early in the morning had something to do with their relative early emergence.

Of particular interest, however, was the ratio of the males and females at various times during the day. As seen by Fig. 3, Graph III there was a tendency for the males to outnumber the females during the day but at night the sexes became equal in number or else the females became more abundant.

Two years later, in Ohio, the author set up a similar apparatus using a five-gallon bottle. Adults were reared from the eggs. *Culex territans* Walker, common in local rain barrels, was used. The results were as shown by Fig. 4.

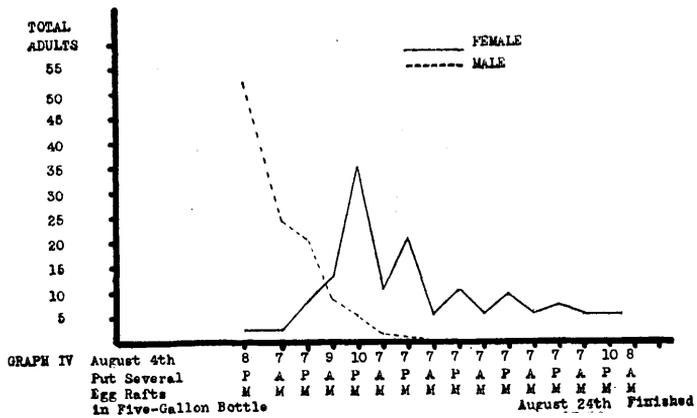


FIG. 4. Emergence of adults of *Culex territans*.

Conclusions based on so little evidence are of little real value but it was extremely interesting to note that males emerged first during the first four days whereas females continued to emerge throughout the entire week. In all, one hundred sixteen males and one hundred twenty-five females emerged.

National Wildlife Federation Announces Nation-Wide \$500 Conservation Poster Contest

Again this year the annual national Conservation Poster Contest will be sponsored by the National Wildlife Federation, announced D. C. Gleeson, Director of the Servicing Division. The purpose of the contest is to develop nation-wide interest, particularly among young people, in the need of restoration and conservation of our natural resources.

The Wildlife Poster Contest is open to all students in the United States from the seventh through the twelfth grades in high schools. The contest will be divided into two groups with a separate prize for each. Group No. 1 will cover all contestants in the seventh, eighth, and ninth grades; and the first prize in this category will be \$100.00. Group No. 2 will cover the high school grades through the senior year, and the first prize for this group will be \$250.00. All entries must be received by January 10, 1950. All awards will be made in connection with National Wildlife Restoration Week, celebrated the first week of Spring in 1950. Other prizes ranging from \$100.00 to \$10.00 will be presented.

The subject of the poster is: Soil and Water—and Their Products. Entries may be based on a general theme of these basic natural resources and may include Soil Use, Conservation Practices, Forestry, Wild Flowers, Plantlife, Animals, Birds, Fish, Water Resources, Pollution, and Flood Control. A conservation slogan should appear on the poster with no other printed matter.

Last year, over two thousand entries were received from all parts of the United States. The winning poster was drawn by Shirley Kabel, a student of Bennett High School in Buffalo, New York.

Rules of the Wildlife Poster Contest may be obtained by writing to the National Wildlife Federation, Washington, D. C. The poster judges will be announced at a later date.